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Innovation with the Hyper Library

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Innovation with the hyper library

Innovation is one of three top priorities of Aalborg University¹, as it appears in the development contract between Aalborg University and the Danish ministry of Science, Technology and Innovation: "The university will (before 2008 (ed.)) be among the leading innovative universities in Europe"² (Development contract, 2006).

As a result of globalization, the focus on innovation is a global tendency to which society and its institutions must give priority. As part of Aalborg University, Aalborg University Library must give an answer to this megatrend as well.

Aalborg University Library is a *hyper library*, characterized by the way in which it loosely connects the library activities search, seek and learn (Rosenstand, Rosenstand & Stehouwer, 2006). This matches an innovative pedagogical model: Need-based learning – a model which offers new opportunities for innovation to students and researchers.

1. The innovation target at Aalborg University

Aalborg University's development contract begins with a focus on research and education, where the most important mean is an innovative and problem-based profile:

"Within the contract period, Aalborg University will consolidate and further develop its position as a prominent, internationally oriented research and educational institution with an effective, innovative and problem-based profile in natural sciences, social sciences, humanities, technical sciences, and health sciences. The university will meet a broad regional demand for academically educated labor, research, innovation, and communication" (Development contract, 2006)

Furthermore, the university will integrate an entrepreneurship culture in all its educational programmes and encourage its graduates and researchers to try out new ideas and inventions in a commercial perspective through new or existing businesses.

On the student side, the main author of this article is a part of a team at the university, which has plans for an annually recurring four day camp in *innovation and business development*³. The camp will be offered to all master students in all disciplines, and for this reason there is a unique opportunity to exercise multidisciplinary innovative work in project groups⁴.

The camp is a suggestion to target number 1 out of 29 in Aalborg University's development contract, and it is the practical inspiration and cause for the viewpoint of this paper:

Target #1: In 2005, 19 students or newly educated graduates completed an entrepreneurship course at the university's incubators with a view to starting their own business. Within the period of 2006 – 2008 one hundred will complete such a course.

¹Aalborg University. Key numbers (2005): 13.638 students, 1.318 master degrees, 106 Ph.D. degrees, 1.247 researchers

² The two other top priorities of Aalborg University relates directly to respectively research and education.

³ The title "Innovation and business development" is at working title.

⁴ There are a number of multidisciplinary study programs at Aalborg University, but they are offered to specific disciplines (Rosenstand, Rosenstand, Pedersen, Gylstorff, 2005).

The pedagogical model of Aalborg University is *problem based learning*, and it is already based on work in project groups. However, as the students usually work together with other students from their own study programme, within a certain paradigm, the idea of total academic multidisciplinary offers a completely new pedagogical dimension that calls for a corresponding new dimension in the pedagogical model.

2. The hyper library

This chapter is based on the paper “The hyper library”, which the main author of this paper presented at LIDA 2006 – Libraries in the Digital Age, Dubrovnik and Mljet, Croatia.

Modern society is hyper complex (Qvortrup, 1998, 2001, 2003, 2004). It is a fundamental condition that the complexity of the society cannot be reduced into a non-complex phenomenon – and the member of this society remains open to this condition when he observes and acts.

The complexity – and uncertainty – of modern society is expressed in information. In order to be able to handle information we need to be information literate on four skill levels: Qualifications, competencies, creativity and culture⁵.

Skill	Focus	Library activity
Qualifications	Tools	Search
Competencies	Process	Seek
Creativity	Product	Learn
Culture	Organisation	Hyper library

The hyper library is an important answer to hyper complexity, and it is not to be understood as the physical library, but rather as a cultural function to set up conditions to handle information by iteration of search, seek, and learn.

The hyper library is a flexible library, which can be altered by the library user – the same phenomenon can be handled from different points of view – from different multidisciplinary perspectives.

The hyper library is characterized by a loosely connected relation between search, seek and learn, and consequently the library user needs to establish his own dynamic connections, where the dynamic aspect is a function of the learning process.

In this matter the library user needs to invent a new specific methodology each time he has to handle information associated to a specific challenge. He needs to be innovative, where the function of innovation is to establish a new connection between resources, performance and results – a change of the conditions regarding the relations between search, seek and learn.

⁵ The skill levels qualifications, competences, creativity and culture are developed by Lars Qvortrup (1998, 2001, 2004) and based on the learning theory of Bateson, which has four adequate levels of learning – first, second, third and fourth order of learning.

Library activity	Level of mind	Situation
Search	Resources	Routine
Seek	Performance	Problem solving
Learn	Results	Problem orientation
Hyper library	Conditions	Innovation

With the aid of the librarian, the library user should be information literate in four types of situations. Firstly, the library user has to master routines to use tools to access resources. Secondly, the library user has to perform a problem solving process when he seeks answers to problems. Thirdly, the library user has to orient himself towards problems with the result of learning. Finally, the library user has to be innovative and set up new conditions for the relation between resource, performance and results – tools, processes and products – in the hyper library.

3. New opportunities for innovation

Aalborg University's pedagogical model of problem based learning fits very well to the problem oriented situation, in which the students are situated during their project work, where they have to choose both methods and problems. The problem based learning is considered as an iterative situation – though routine, problem solving, and problem orientation.

Library activity	Situation	Pedagogy	Method	Problem	Discipline
Search	Routine	Definition-based learning	+	+	+
Seek	Problem solving	Solution-based learning	-	+	+
Learn	Problem orientation	Problem-based learning	-	-	+
Hyper library	Innovation	Need-based learning	-	-	-

The table above has integrated the situation we have termed *innovation*, which match the innovative pedagogical model⁶, where the students also have to choose, combine and give priority to their different disciplines.

Need-based learning integrates definition-based, solution-based and problem based learning. And like the problem based learning this is also considered an iterative situation – though routine, problem solving, problem orientation, and innovation. This innovative pedagogical model is based on needs, because needs are fixed points in the hyper complex society. When the same phenomenon can be handled from different points of view, different types of problems, solutions and definitions will emerge as a result of the perspective.

During the camp in innovation and business development (cf. The innovation target at Aalborg University), where the students will be placed in multidisciplinary groups regarding their interest in different challenges which match different needs, the hyper library is offered as a concrete and pedagogical framework for innovative coupling of resources, performance and results though the activities search, seek and learn.

An example of an innovative work in a project group could be a new computer game for deaf children, which integrates manual sign language in the game: The characters in the game actually use manual language design. This require a multidisciplinary approach, where the students and / or the researchers choose, combine and give priority to different disciplines such as psychology, digital design, computer science, communication, new media, and off course language design.

⁶ The innovative pedagogical model is suggested in Rosenstand, Rosenstand and Stehouwer 2006

When the librarian interacts with such a project group of student, where the members have different disciplinary backgrounds, it is important that he/she can facilitate the learning process with a strong focus on their needs, because each student may very well show different behaviour reflecting their respective disciplinary backgrounds when it comes to routines, problem solving and problem orientation. But the point is exactly that they have to combine the different behaviours themselves.

In other words, the hyper library offers a concrete pedagogical framework for the need-based learning in a new situation, which we characterized as total academic multidisciplinary. The need-based learning adds a new pedagogical dimension, which corresponds to multidisciplinary studies and research. Thus, the hyper library is an important mean to meet the globalization with its focus on innovation.

4. Conclusions

As a result of globalization, focus on innovation is a global tendency to which society and its institutions must give priority. As part of Aalborg University, Aalborg University Library must also give an answer to this megatrend. The theoretical answer presented in this paper is the concept of the hyper library.

The pedagogical model of Aalborg University is *problem based learning*. However, the new concept of total academic multidisciplinary offers a completely new pedagogical dimension, which calls for a corresponding new dimension in the pedagogical model.

The answer is an innovative pedagogical model, which is based on needs, where the students have to choose, combine and give priority to multiple disciplines.

Finally, the hyper library is offered as a practical and pedagogical framework for the innovative coupling of resources, performance and results through the activities search, seek and learn. The hyper library is an important answer to the innovative megatrend – to support innovation in a multidisciplinary environment of students and researchers.

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